Classes and Inheritance Solutions

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Deriving a class

- Write a simple Vehicle class. This has one public member function, accelerate(), which takes no arguments
- Write a simple Aeroplane class which is a derived class of Vehicle and has no member functions of its own
- Write a test program which creates an Aeroplane object and calls its accelerate member function
- Explain your results
  - Aeroplane inherits all the member functions of Vehicle
  - Calling the accelerate member function results in Vehicle's member function being called

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Member function inheritance

- Add a public member function to your Aeroplane class. This function is called accelerate() and takes one argument
- Run your test program again. Explain your results
  - The program does not compile
  - If a derived class overloads an inherited member function, all the inherited member functions with that name are "hidden" and are not available in the derived class
- Suggest a way to make the program work as intended
  - Add the following statement to the Aeroplane definition

    ```
    using Vehicle::accelerate;
    ```

  - This will make all inherited member functions named "accelerate" available in the Aeroplane class

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Protected Access

- Modify the Vehicle class so that the accelerate() member function has "protected" accessibility
- Modify the program so that it creates a Vehicle object and calls its accelerate() member function
- Comment out these changes and modify Aeroplane's accelerate() member function to call Vehicle's accelerate()

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Protected Access

- Explain your results
  - Protected accessibility means that the member function can only be called by a member function of the Vehicle class, or a class derived from Vehicle
  - In the first case, the calling code was not such a member function, so the call did not compile
  - In the second case, the calling code was a member function of a derived class, so the call compiled

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